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## ORGANIZATION FOR LONG-TERM MANAGEMENT OF HYPERTENSION: THE ROLE OF THE PHYSICIAN\*

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EACH physician functioning within the conventional pattern would be required to add 11 hours to his working week to diagnose and treat the estimated 20 million hypertensives in the United States. But now, even when antihypertensive therapy is available through the traditional one-doctor-per-patient system, the outcome usually is not satisfactory: at least half of the treated hypertensives do not achieve the goal of therapy. Thus, there are qualitative as well as quantitative shortcomings in the existing system of care that are not likely to be solved merely by additional care of the same type. The system for the control of hypertension described here is one attempt to meet the needs of asymptomatic working adults with high blood pressure.

The program that forms the basis of this section of the symposium was developed in collaboration with the United Storeworkers Union in New York City. Its special features include provision of all diagnostic and therapeutic services at the work site, integration with a cohesive trade-union structure, adherence to a rigid protocol, and follow-up care, primarily provided by a team of nurses and paraprofessionals.

The role of the physician within this health team is much broader and more varied than that traditionally assumed by the doctor. Philosophically, it requires that the physician relinquish a part of his or her special relation with the patient and share it with a group of therapists. Practically, the

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physician must extend his clinical role to encompass the supervision of care provided primarily by others. To effectively discharge this responsibility he must prepare the team for its assignment, supervise the work of the team, and evaluate its effect on the patient. Although he usually is not in direct contact with patients, in a legal and practical sense they remain under the physician's care.

The first assignment of the physician as initiator and director of the program is to design a protocol for detection and treatment. It must be specific, detailed, and responsive to the actual situation to be encountered. A variety of approaches can be adopted; the approach which was taken in our program was based on our desire to maintain substantial physician involvement in what was to be, basically, a long-term paraprofessional-patient relation.

When staff is recruited, the physician provides appropriate instruction about the medical aspects of hypertension. Material to be covered should include the general clinical aspects of the disease as well as the specifics included in the protocol. Technical skills must be acquired, particularly by nonprofessionals, but the success of the program depends upon the ability of the staff to develop a solid relation with the patient to encourage maintenance of a long-term therapeutic commitment.

The physician also is responsible for standards of excellence in clinical practice. He or she performs the traditional role of evaluating the patient once the blood-pressure elevation has been established. Using laboratory, historical, and physical data which have already been collected by the nurse, the physician does a routine history and physical examination, determines the patient's suitability for the program, and initiates therapy as the first step of the protocol which will subsequently be followed by the nurse or nonprofessional. After this initial examination, clinical supervision by the physician is primarily indirect. Regular quarterly reports are prepared for the physician and include current therapy, laboratory data, and the blood pressure of each patient. Problem cases, identified by the nurse, are reviewed with the physician at his/her monthly clinic visits. Rarely, individual patients can be seen at these visits. There is also an annual physical examination by the physician. Patients who have intercurrent medical problems or whose blood pressure has not been controlled are referred to the back-up hospital.

Thus, supervision, evaluation, and education through the case method are incorporated in the design of the program. In addition to at least

monthly visits to each clinic, regular clinic reviews, and annual reevaluation of patients, there are monthly meetings of the entire staff. During the past year the health team has been able to modify and improve the process of care with increasing success in terms of outcome.

The storeworkers' hypertension control program began in the spring of 1973. At each work site screening was preceded by a campaign to inform prospective patients about the significance of high blood pressure and its treatment. Confirmation of hypertension required that elevated readings be obtained on three occasions, each separated by one week. Blood pressure was measured when the patient was sitting after a five-minute rest; a standard mercury manometer was used. Persons known to be hypertensive and already taking medication were not required to undergo the confirmation process, but were immediately eligible for the program. All hypertensive employees were offered the choice of participating in this program or being referred to their usual source of medical care.

The search for a specific correctable cause for the hypertension was restricted to history and physical examination as well as determination of hemoglobin, blood urea nitrogen (BUN), blood sugar, cholesterol, serum potassium, urinalysis, and electrocardiogram (ECG). Patients with serious intercurrent illnesses or renal insufficiency characterized by creatinine levels of more than 2.0 mg.% were excluded from the program by the physician at the intake examination.

This limited work-up may be at some variance with traditional teaching, which usually has advocated more extensive diagnostic procedures to uncover cases of nonessential hypertension. Our approach has been first to treat the hypertension and, if unsuccessful, then to undertake a more intensive search for secondary hypertension. Under these circumstances, the group that ultimately will be evaluated should be much less than 10% of the entire group. It is clearly impractical to do renal arteriograms on 20 million Americans, but it is possible to control their blood pressures. Perhaps, as we learn more about "essential" hypertension this approach will merit reevaluation, but at our present state of knowledge it seems the most feasible approach is to care for large numbers of uncomplicated hypertensives.

Initially, patients were seen weekly, then every other week, then monthly, and, ultimately (in the ideal situation), every three months. Therapy was begun with 25 mg. of hydrochlorothiazide (HCTZ) daily and progressed by stepwise increment until blood pressure fell to less than 140/95

DISTRICT COUNCIL NO. 37 HYPERTENSION-CONTROL  
PROGRAM. THREE-MONTH OUTCOME

	<i>No.</i>	<i>%</i>
Blood pressure < 160/95 mm. Hg	166	78.3
Blood pressure decreased 10%, but still $\geq$ 160/95 mm. Hg	10	4.7
Blood pressure increased or remained unchanged	22	10.4
Patient left the program	14	6.6
Total	212	100.0

mm. Hg. The maximum dose of HCTZ, 100 mg., was attained in six weeks. If blood pressure had not reached the goal, methyldopa was added, starting with 750 mg. daily and increased in four steps to the maximum dose of 2,000 mg. If blood pressure still exceeded 160/95 mm. Hg, hydralazine was substituted for the methyldopa, starting with 50 mg. daily and increasing to a maximum of 200 mg. Patients with hyperuricemia, hyperglycemia, or hypokalemia did not receive HCTZ. The eight steps of the standard protocol could be traversed in about eight months. If at the conclusion of the protocol blood pressure was not satisfactorily controlled, the patient was referred to the back-up hospital, where a more diligent search for secondary hypertension was undertaken.

There has been no resistance by patients to dealing primarily with nurses and paraprofessionals, particularly when it was explained that the treatment has been designed by physicians and that a physician supervises the program and is readily available for consultation. Patients were advised that the program was limited to the treatment and control of hypertension; other illness would require medical care elsewhere. When participants in the program identified a personal physician, an attempt was made to establish contact and cooperation with that physician.

The clinic serving employees at the New York City Bureau of Medical Assistance (BMA) is typical of the program. It opened in October 1974. Of the estimated total work force of 1,500 employees, 89% (1,350 employees) were screened. This group included 54% blacks, 42% whites, and 4% Puerto Ricans. Females constituted 81% of the group.

Of the population screened, 21% (283) were found to have hypertension which required treatment. Only 30% of these patients had their blood pressure satisfactorily under control at the time of screening. Thus, more

than 70% of the employees of the BMA with confirmed hypertension were undiagnosed, untreated, or treated unsuccessfully.

Of the employees confirmed as hypertensive, 79% (223 employees) elected to become patients in the program. Of these, 11 were not accepted for care at the initial physical examination. The results of treatment after three months are available for the remaining 212 patients (see table). More than 93% are still participants in the program; more than 80% have achieved at least a 10% reduction of blood pressure. There have been no significant untoward events involving the disease or its treatment. These results confirm the previous experience among the members of the United Storeworkers Union.\*

Traditionally, health-care delivery takes place within the confines of a personal encounter between patient and physician. As medical capability has expanded and the demand for it has grown, the ability of physicians to provide satisfactory service often has been exceeded. As long as we operate within this traditional pattern of health-care delivery, there will be either maldistribution of high-quality care or more equitable distribution of perhaps less desirable service. The hypertension-control program described here presents an alternative which involves modification of the system to accommodate the qualitative as well as the quantitative demand for medical care. In this model the physician directs a health team that shares responsibility for the care of patients and he, thus, has been able to vastly increase the number of hypertension patients for whom he can provide safe, acceptable, and highly effective care.

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\*Alderman, M. H. and Schoenbaum, E. E.: Detection and treatment of hypertension at the work site. *N. Engl. J. Med.* 293:65-68, 1975.